

Amendments to the Specification:

Please replace the paragraph beginning at page 3, line 7 with the following amended paragraph:

Figure 5 shows another embodiment using a [[...]] common substrate to support the laser and the optical detector.

Please replace the paragraph beginning at page 3, line 8 with the following amended paragraph:

~~Figure 6...~~ Figures 6A and 6B show two embodiments of integrated optical sensors.

Figure 7 shows an integrated optical sensor based on a phased Doppler technique.

Please replace the paragraph beginning at page 8, line 7 with the following amended paragraph:

Another embodiment which forms a fiber optic particle probe is shown in Figures 6A and 6B [[6a and 6b]]. A diode laser is used along with curved gratings and detectors. Figure 6A shows a configuration with a laser 600 emitting along both sides 602 and 604. The two-sided emission provides laser output arms 606, 608. Beam 606 is reflected by mirrors 612, 614, and coupled to a curved grating 616. Beam 608 is correspondingly coupled to grating 618. The outputs 622, 624 of gratings 616, 618 are recombined off the surface at a point 610. The point 610, for example, can be 3 millimeters over the surface of the substrate 600. A fringe pattern is formed by the recombination.

Please replace the paragraph beginning at page 9, line 14 with the following amended paragraph:

The grating 654 redirects the light 652 into two separated light beams 660, 662, which are separated by the blocked portion

656. The two light beams 660 and 662 are directed to intersect 3 millimeters off the surface at the point 664. A separate laser 668 produces an IMAX beam 670. As in the Figure 6A embodiment, photodetectors 680, 682 detect the scattered light and use the scattered light to find particle size.